

# Work Order ID 91866

\*91866\*

Page 1

October-19-12 12:50:33 PM

Item ID: D6103-003 Accept \*N900040100\* Setup Start \*NS1\*  
 Revision ID: Stop \*NS2\*  
 Item Name: Round Billet, Aluminum  
 Start Date: 10/18/12 Start Qty: 12.00 \*12\* Cust Item ID:  
 Required Date: 11/09/12 Req'd Qty: 12.00 \*12\* Customer:  
 Reference:

Approvals: Process Plan:                      Date: 12-10-12 Tooling:                      Date:                      Run Start \*NR1\*  
 QC:                      Date:                      SPC (Y/N):                      Date:                      Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D6103	Rev B								

100 PURCHASING 0.00  
 \*100\*  
 Purchasing Memo 0.00  
 Purchasing Issue P/O: 18198 a)Description: Alluminum round billet b)  
 Ø3.500" x 12.500" longc) Tolerance on all dimensions are +0.030"/-0.000"  
 d) Material: 7075-T7351 (QQ-A-225/9) Material certification required

12-10-22

110 Receive & Inspect for Damage & Mat'l Certs 0.00  
 \*110\*  
 Packaging Memo 0.00  
 Packaging Ensure material certification is attached

12/10/30 (12)

120 QC6- Inspect dimensions to drawing 0.00  
 \*120\*  
 QC Memo 0.00  
 Quality Control

DAS 14 12/10/31

12 Ø

NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____  Part No. _____  NCR No. _____				<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		<b>AGAINST DEPARTMENT/PROCESS</b>  <div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/>            Machining <input type="checkbox"/>            Thermoforming <input type="checkbox"/>            Large Fab <input type="checkbox"/> </div> <div>           Crosstube <input type="checkbox"/>            Small Fab <input type="checkbox"/>            Finishing <input type="checkbox"/>            Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/>            Prod. Eng. Coord. <input type="checkbox"/>            Rec/Store/Packaging <input type="checkbox"/>            Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/>            Quality <input type="checkbox"/>            Other <input type="checkbox"/> </div> </div>					
<b>Root Cause</b>	<b>Date</b>	<b>Step</b>	<b>Qty</b>	<b>Description of work order update or Non-conformance</b>	<b>Initial Chief Eng</b>	<b>Action Description</b>	<b>Sign &amp; Date</b>	<b>Verification</b>	<b>QC Inspector</b>		
Doc/Data <input type="checkbox"/>											
Equip/Tooling <input type="checkbox"/>											
Operator <input type="checkbox"/>											
Material <input type="checkbox"/>											
Setup <input type="checkbox"/>											
Other <input type="checkbox"/>											
Process <input type="checkbox"/>											
Supplier <input type="checkbox"/>											
Training <input type="checkbox"/>											
Unapproved <input type="checkbox"/>											

FAULT CATEGORY				
<b>Landing Gear</b> <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube	<b>General</b> <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio	<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions	<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge  <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled  <input type="checkbox"/> Other	

**Work Order ID 91866****\*91866\***

Page 2

October-19-12 12:50:33 PM

Item ID: D6103-003 Accept **\*N900040100\*** Setup Start **\*NS1\***  
Revision ID: Stop **\*NS2\***  
Item Name: Round Billet, Aluminum  
Start Date: 10/18/12 Start Qty: 12.00 **\*12\*** Cust Item ID:  
Required Date: 11/09/12 Req'd Qty: 12.00 **\*12\*** Customer:  
Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start **\*NR1\***  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Identify as per dwg & Stock Location: <b>NAT 43</b>	0.00							
<b>*130*</b>									
Packaging	Memo	0.00				12	2		
Packaging									
140	QC21- Final Inspection - Work Order Release	0.00							
<b>*140*</b>									
QC	Memo	0.00							
Quality Control									

*12/10/31*

*12/10/31*

*12-10-31*

NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____  Part No. _____  NCR No. _____				<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		<b>AGAINST DEPARTMENT/PROCESS</b>  <div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/>            Machining <input type="checkbox"/>            Thermoforming <input type="checkbox"/>            Large Fab <input type="checkbox"/> </div> <div>           Crosstube <input type="checkbox"/>            Small Fab <input type="checkbox"/>            Finishing <input type="checkbox"/>            Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/>            Prod. Eng. Coord. <input type="checkbox"/>            Rec/Store/Packaging <input type="checkbox"/>            Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/>            Quality <input type="checkbox"/>            Other <input type="checkbox"/> </div> </div>						
<b>Root Cause</b>	<b>Date</b>	<b>Step</b>	<b>Qty</b>	<b>Description of work order update or Non-conformance</b>	<b>Initial Chief Eng</b>	<b>Action Description</b>	<b>Sign &amp; Date</b>	<b>Verification</b>	<b>QC Inspector</b>			
Doc/Data <input type="checkbox"/>												
Equip/Tooling <input type="checkbox"/>												
Operator <input type="checkbox"/>												
Material <input type="checkbox"/>												
Setup <input type="checkbox"/>												
Other <input type="checkbox"/>												
Process <input type="checkbox"/>												
Supplier <input type="checkbox"/>												
Training <input type="checkbox"/>												
Unapproved <input type="checkbox"/>												
<b>FAULT CATEGORY</b>												
<b>Landing Gear</b> <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube			<b>General</b> <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio			<input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions			<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge		<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled <input type="checkbox"/> Other	

# Picklist Print

October-19-12 12:50:33 PM

Page 1

Work Order ID: 91866

Parent Item: D6103-003

Start Date: 10/18/12

Required Date: 11/09/12

Parent Item Name: Round Billet, Aluminum

Start Qty: 12.00

Required Qty: 12.00

Comments: IPP Rev:A New Issue 06-02-09 JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6103-003P round alum billet		Purchased	No			110	Each	0.0000	1	12			

*[Handwritten signature]*

NCR: Yes / No

**WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

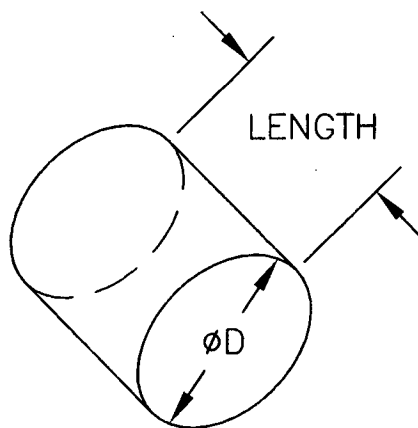
Work Order: _____  Part No. _____  NCR No. _____				<b>DISPOSITION</b>  Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>		<b>AGAINST DEPARTMENT/PROCESS</b>  <table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">Skid-tube <input type="checkbox"/></td> <td style="width: 25%;">Crosstube <input type="checkbox"/></td> <td style="width: 25%;">Water Jet <input type="checkbox"/></td> <td style="width: 25%;">Engineering <input type="checkbox"/></td> </tr> <tr> <td>Machining <input type="checkbox"/></td> <td>Small Fab <input type="checkbox"/></td> <td>Prod. Eng. Coord. <input type="checkbox"/></td> <td>Quality <input type="checkbox"/></td> </tr> <tr> <td>Thermoforming <input type="checkbox"/></td> <td>Finishing <input type="checkbox"/></td> <td>Rec/Store/Packaging <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Large Fab <input type="checkbox"/></td> <td>Composite <input type="checkbox"/></td> <td>Supplier <input type="checkbox"/></td> <td></td> </tr> </table>						Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coord. <input type="checkbox"/>	Quality <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>	
Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>																								
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DESIGN PH	DRAWN BY PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED [Signature]	APPROVED [Signature]	DRAWING NO. D6103	Rev. B SHEET 1 OF 1
DATE 06.01.31		TITLE ROUND BILLET, ALUMINUM	SCALE NTS
A	01.04.10	NEW ISSUE	
B	06.01.31	ADD D6103-003	

## SPECIFICATION CONTROL DRAWING

RELEASED  
06.02.07 [Signature]



91866  
01/12-10-19

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES.

Part No.	Alloy	D (Diameter)	Length
D6103-001	7075-T6/T651 (QQ-A-200/11 OR QQ-A-225/9)	Ø3.250	12.50
D6103-003	7075-T7351 (QQ-A-225/9)	Ø3.500	12.50

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**Castle Metals®**

A. M. Castle &amp; Co.

PACKING SLIP/  
CERTIFICATE OF CONFORMANCE

Page 1 of 1

Shipment No:1520790

<b>Ship From:</b> A. M. Castle & Co. (Canada) Inc. MONTREAL 835-SELKIRK AVENUE POINTE CLAIRE, QUEBEC H9R 3S2		<b>Sold To:</b> DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA		<b>Ship To:</b> DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CAN		<b>Deliver To:</b> DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA	
<b>Date Shipped</b> 29-OCT-2012	<b>F.O.B.</b> ORIGIN	<b>Freight Terms</b> Prepaid		<b>Carrier</b> MANITOULIN		<b>BOL No</b> 1520790-2	

<b>Shipment Details</b>	<b>Final Destination Branch - MON</b>
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<b>Order No</b> 2495339	<b>Line No</b> 1	<b>Item No</b> 8808.MO	<b>Description</b> 3.5000..RD.7075.T7351.ALUMINUM.CF.144.0000 CUT TO 12.5 IN ( + .1250/- .0000 IN) - BAND SAW CUTTING SPECIFICATIONS: QQ-A-225/9				
<b>Purchase Order No</b> 18198		<b>Part Number</b> YOUR ITEM NUMBER: D6103-003		<b>Ordered Qty</b> 12.00 PCS		<b>Invoice Qty</b> 12.00 PCS	
<b>Details</b>		END USER: SIKORSKY END USE: COMMERCIAL AIRCRAFT PARTS ECCN # 1G202.a					
<b>Delivery No.</b> 118089006	<b>Mill</b>	<b>Heat Number</b> MA01100333	<b>Mech Id</b>	<b>PCS</b> 12	<b>Width (IN)</b>	<b>Length (IN)</b>	<b>Shipped Qty(LBS)</b> 145.5045

These commodities/technologies are subject to US Export Administration & US State Dept. Regulations and, if intended for export, were/are exported thereunder. Diversion contrary to US Law is Prohibited.

We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.

Reviewed by Authorized Castle Metals Representative:

Date:

Name:

DAS  
14  
2-89

12/10/31



# Certified Inspection Report

05/25/11  
09:30:29

Alcoa Inc.  
Massena Operations  
Park Avenue East, Massena, NY 13662



Customer **Castle A M & Co** Customer P.O. No. **109532** Customer Part No. **(8808)** Alcoa Order No. **MMC-97150-002** Govt. Contract No. \_\_\_\_\_  
Ship To **A. M. Castle & Company**  
**3400 North Wolf Road**  
**Bay #7**  
**Franklin Park, IL 60131**

We hereby certify that the material covered in this report has been inspected in accordance with, and has been found to meet the applicable requirements described herein, including any specifications forming a part of the description and that samples representative of the material met the composition limits and have the mechanical properties shown on the face of this sheet. Manufactured under an ISO/QS-9000 registered quality management system.  
Melted and manufactured in the USA.

Thomas J. Klemp, Quality Assurance Manager

*Thomas J. Klemp*

Date Shipped **05/25/11** Weight Shipped **10,104 lbs** Product **CFRB-CF ROD** Specific Length **BOL 000159457**  
Alloy - Temper **7075-T7351** Size **3.50000 IN** Shape **DIA** Config **12 FT** QRR

## Specifications:

197075-11 Rev 10 w/exc & comments per T  
Klemp email dtd 1/5/10  
Material conforms to T73 requirements  
Minimum mechanical properties to apply:  
18 KSI Tensile Strength  
16 KSI Yield Strength  
0% Elongation  
AMS 4124D (Except Size)  
QA-225/9E (Except Size)  
STM B211-03 (Except Size)  
AMS-QQA-225/9 (Except Size)

Product produced and marked to the requirements of AMS-QQ-A-225/9 also meets the requirements of QQ-A-225/9.  
Product produced and marked to the requirements of QQ-A-225/9 also meets the requirements of AMS-QQ-A-225/9.

DAS  
14 12/10/31  
9-89

TEST REQUIREMENTS		Test	Test	Test	Test	Test	Test	Test	Test	Test
		U.T.S.	T.Y.S.	%Elong	Cond					
Max:			67.9							
Min:		68.0	56.0	10.0	38.0					

Test Results		Test	Test	Test	Test	Test	Test	Test	Test	Test
		U.T.S.	T.Y.S.	%Elong	Cond					
Lot / Work Order	No. of Tests									
4A011003332	1	Max: 72.3	61.2	15.0	41.1					
		Min: 72.3	61.2	15.0	41.1					
4A011003333	1	Max: 71.0	59.4	15.0	41.4					
		Min: 71.0	59.4	15.0	41.4					
4A011004085	1	Max: 72.3	61.0	15.0	40.9					
		Min: 72.3	61.0	15.0	40.9					

## EST ABBREVIATIONS

U.T.S. Ultimate Tensile Strength KSI  
Cond Conductivity % IACS

T.Y.S. Tensile Yield Strength KSI

%Elong Elongation % in 2"

## Aluminum Association Chemical Composition Limits (in Weight %)

ALLOY	MAX	%SI	%FE	%CU	%MN	%MG	%CR	%ZN	%TI	%Others	%Others	%AL			
7075	MIN	0.40	0.50	2.0	0.30	2.9	0.28	6.1	0.20	0.05	0.15	Rem			
				1.2		2.1	0.18	5.1		Each	Total				

# Certified Inspection Report

05/26/11  
09:30:29

Alcoa Inc.  
Massena Operations  
Park Avenue East, Massena, NY 13662



Customer <b>Castle A/M &amp; Co</b>	Customer P.O. No. <b>109532</b>	Customer Part No. <b>(8808)</b>	Alcoa Order No. <b>MMC-97150- -002</b>	Govt. Contract No.
--	------------------------------------	------------------------------------	---	--------------------

Actual Started Chemistry

LOT/WORK/ORDER		%SI	%FE	%CU	%MN	%MG	%CR	%ZN	%TI	%OE	%OT	%AL		
MA011003332	MAX	0.08	0.15	1.6	0.02	2.5	0.20	5.7	0.02	LT 0.05	LT 0.15	Rem		
	MIN	0.06	0.12	1.4	0.01	2.3	0.20	5.5	0.02					
MA011003333	MAX	0.08	0.12	1.6	0.02	2.5	0.20	5.7	0.02	LT 0.05	LT 0.15	Rem		
	MIN	0.07	0.12	1.4	0.02	2.3	0.20	5.5	0.02					
MA011004085	MAX	0.08	0.15	1.6	0.02	2.5	0.20	5.7	0.02	LT 0.05	LT 0.15	Rem		
	MIN	0.06	0.12	1.4	0.01	2.3	0.20	5.5	0.02					

## NOTES:

Mercury is not a normal contaminant in aluminum alloys and neither it nor any of its compounds are used in the manufacture of our product.  
This alloy meets the requirements of EU 2002/95/EC (RoHS) and EU 2000/53/EC for lead, mercury, cadmium and hexavalent chromium.

DAS  
14  
8-89 12/16/31

## Castle Metals FP

HEAT NUMBER MA011003333  
MECHANICAL ID \_\_\_\_\_  
ITEM CODE 8808  
LOT NUMBER \_\_\_\_\_  
PO NUMBER 109532  
RECEIPT DATE 5-31-2011  
SUPPLIER ALCOA  
SPECIFICATION \_\_\_\_\_  
LCS NO  
COMMENT \_\_\_\_\_  
APPROVED BT

# Certified

Customer  
**Castle A M**  
Ship To **A. M**  
**340**  
**Bay**  
**Frar**

Date Shipped  
Alloy - Tempe  
Specifications:

97075-11 Re  
Temp email dt  
Material confor  
Aluminum mech  
18 KSI Tensile  
16 KSI Yield S  
0% Elongatio  
MS 4124D (E  
QA-225/9E (I  
STM B211-0  
MS-QQA-221

Product pro  
Product pro

## TEST REQUIREMENTS

Test Results

Lot / Work Or  
**MA01100333**

**MA01100333**

**MA01100408**

EST ABBREV  
U.T.S.  
Cond  
Aluminum Ass

ALLOY  
**7075**